

INSECTS OF SAMOA

PART VI, FASC. 6

DIPTERA

LONCHAEIDAE, CHLOROPIDAE, PIOPHILIDAE

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(With 3 Text-figures)

LONCHAEIDAE.

THIS family is a rather small one, containing but one generally accepted genus, which has been divided into several subgenera by Bezzi. The species are very widely distributed, occurring in every faunal region, and are very similar in general appearance. All are black, with a more or less pronounced blue or green tinge, rarely metallic green or golden, and the wings are never distinctly marked though in some cases they are rather deeply tinged with fuscous. None of the species known to me have the knobs of the halteres pale, and all have the legs mainly black, only the tarsi being partly yellow in certain species.

The larvae occur under bark, or in decaying fruits or vegetables. I have reared some North American species, and find that under certain circumstances they are cannibalistic, while the frequency with which they attack dipterous larvae, even their own kind, leads me to believe that they are generally predaceous. They are capable of jumping, which they accomplish by bending round, attaching the mouth-hooks to the anal extremity and exerting muscular force, which, upon the sudden release of the mouth-hooks, propels them from the surface sometimes for a distance of five inches. Some of the species feed in fruits, and Bezzi placed those in which the arista is clothed with long hairs in the subgenus *Carpolonchaea*, in which he considered the habit to be universal. I am not at all certain that there is any correlation between the presence of arisal hairs and the habit of feeding in fruits, nor that species with a bare arista will not feed in fruits.

Bezzi recorded four species of the genus from Fiji. Several more are represented in the Samoan material now before me, a key for the separation of which is given below. I am very much inclined to the belief that there are more Oriental species of the genus than Bezzi supposed, and possibly they are not so generally distributed as the published records would indicate, but without a careful examination of type specimens differentiation of closely allied species is impossible. I have figured the hypopygia of two of the Samoan species, in the hope that by doing so I may definitely establish their specific identities. Some species have a long, hair-like central process in the hypopygium, which is capable of exertion well beyond the apex of abdomen, but is more frequently retracted (text-fig. 1) and then not visible without dissection.

KEY TO THE SPECIES.

1. Arista distinctly hairy, shortest hairs on basal half very distinctly longer than its basal diameter; legs entirely black (subgenus *Carpolonchaea*) 2
 Arista bare or very minutely pubescent 6
2. Squamae fuscous, with dark fringes; frons of male parallel-sided on posterior, or upper, two-thirds, gradually and distinctly widened from anterior third to bases of antennae; scutellum with some stiff hairs on margin between the bristles, two or more at apex; wings yellowish hyaline, not paler at base *uniformis*, sp. n.
 Squamae yellowish white, with pale fringes 3
3. Males 4
 Females 5
4. Width of frons in middle not more than one-third of its length in centre; hypopygium as in text-figure 2; wings not conspicuously pale at base *nigritella*, sp. n.
 Width of frons in middle about one-half of its length in centre; hypopygium as in text-figure 1; wings conspicuously yellow at base *filifera* Bezzi
5. Ovipositor slender, apically not as wide as third antennal segment; wings not at all yellow at base, somewhat brownish on basal portion of veins *nigritella*, sp. n.
 Ovipositor broad, apically at least as wide as third antennal segment, with abruptly pointed tip; wings conspicuously yellow at base, bases of veins pale yellow *filifera* Bezzi
6. Face with rather broad, rounded, vertical, median carina; basal segment of all tarsi yellow, blackened at apex; metallic green species, dorsum of abdomen with a golden tinge (subgenus *Lamprolonchaea*). *aurea* Macquart.
7. Face not carinate; legs entirely black; black species, with slight bluish or aeneous lustre on dorsum (subgenus *Lonchaea*) *uniseta*, n. sp.

1. *Lonchaea* (*Lamprolonchaea*) *aurea* Macquart.

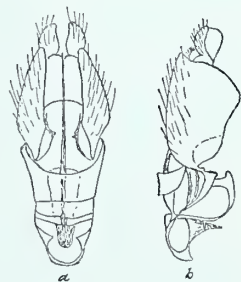
A very widely distributed species, readily distinguishable from any of its congeners by its brilliantly green body and carinate face. The arista is bare, the basal segment of each tarsus yellow except at the apex, the squamae are pale with pale fringes, and there is no outstanding bristle on the anteroventral surface of the hind femur.

Tutuila: Pago Pago, 30.ix.1923 (Swezey & Wilder), 4.xii.1924 (Bryan), 14.xii.1925 (Buxton & Hopkins), Leone Road, 29.iii.1926 (Judd). Upolu: Apia, 14.v.1924, 20.x.1923 (Armstrong), 8.v.1924; Malololelei, 5.i.1924 (Armstrong), 30.xi.1924. Savaii: Safune, 12.v.1924 (Bryan). In addition I have before me a specimen from the Ellice Islands, Funafuti, ix.1924 (Buxton). Recorded by Bezzi from Fiji, and occurring throughout the Pacific Islands and southward into Australia.

2. *Lonchaea* (*Carpolonchaea*) *filifera* Bezzi (Text-fig. 1).

This species, originally described from material from the Philippine Islands, has also been recorded from Fiji and Australia. Frequently the hair-like hypopygial organ is very prominently protruded, and then the male is readily distinguishable from any other species. *L. filifera* is shining black, with the scutellum slightly pollinose, the legs black, and the bases of the wings and squamae whitish yellow. The hind femur has a few short setulae on the apical half or more of the anteroventral surface, but no outstanding bristles.

Upolu: Apia, 3.ii.1924 (Armstrong), 28.iv.1925; xi. 1924, Aleipata, 10.iv.1924. Savaii: Safune, lower forest, 1,000–2,000 feet, 4.5.v.1924 (Bryan).



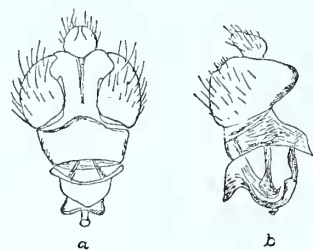
TEXT-FIG. 1.—*Lonchaea filifera* Bezzi.—Hypopygium: (a) from below; (b) from the side.

3. *Lonchaea* (*Carpolonchaea*) *nigritella*, sp. n. (Text-fig. 2).

♂. Glossy black, legs entirely black, face lightly clothed with whitish dust, frons dull black except posterior third of orbits, which are glossy; wings slightly tinged with brown, less obviously so on anal region, veins dark brown, hardly paler at base; squamae and their fringes white.

Frons nearly three times as long as its width at vertex, slightly narrowed in centre, with numerous very short hairs which are densest near sides, postverticals minute, all other bristles present and well developed; lunule hairy; antennae situated a little below middle of face in profile, attaining mouth margin, third segment rather broad, hardly three times as long as wide; arista with its longest hairs about half as long as width of third antennal segment; eyes bare; palpi slightly widened. *Thorax* with two pairs of postsutural dorsocentrals, and (in case of type) with two pairs of postsutural acrostichals, mesonotum not very

densely clothed with hair; scutellum with a few fine hairs on margin between the strong bristles; sternopleura with one strong and one weak bristle; mesopleura with several anteriorly curved discal bristles. Hypopygium as Fig. 2. *Legs* normal, hind femur without outstanding, anteroventral, preapical bristles. *Inner cross vein* well proximad of apex of first vein and middle of discal cell; first posterior cell very slightly narrowed apically.



TEXT-FIG. 2.—*Lonchaea nigritella*, sp. n. Hypopygium: (a) from below; (b) from the side.

♀. Similar to ♂, differing in having the frons wider, at vertex about equal in width to one-half of its length. There is no second pair of postsutural acrostichals in the allotype, although they are represented in two paratypes. Genitalia normal, apex of ovipositor drawn out into a narrow point.

Length, 3–3.5 mm.

Upolu: Apia, Mt. Vaea, 1,200 feet, type, 20.ii.1925; Malololelei, 2,000 feet, allotype, 20.vi.1924 (Buxton & Hopkins). Tutuila: iv.1918, 21.vii.1918, paratypes (Kellers).

4. *Lonchaea* (*Carpolonchaea*) *uniformis*, sp. n.

♂. Similar to foregoing species in general coloration, but with squamae brown or fuscous, with blackish fringes.

Differs in structure in having the *frons* uniformly wide on upper two-thirds and more widened in front, the third antennal segment fully three times as long as wide, a quite strong forwardly curved bristle on each cheek near anterior margin, and the *sternopleura* with two almost equally long bristles. Fourth

visible tergite of *abdomen* longer than third. Marginal hairs on scutellum between the bristles stronger than in the preceding species.

Length, 4.5 mm.

Savaii : Safune, type 13.v.1924 (Bryan).

5. *Lonchaea* (*Lonchaea*) *uniseta*, sp. n.

♂♀. Very similar to *L. uniformis* in general coloration ; *thorax* and *abdomen* glossy black, *legs* entirely black, *frons* dull black except on upper orbits, *squamae* fuscous with dark fringes.

Frons in ♂ about 2.5 times as long as its width at vertex, with sides incurved centrally and outwardly inclined at both extremities, anterior width being a little less than the vertical, surface with microscopic hairs, all bristles present, and all except postvertical pair quite strong ; eyes bare ; antennae attaining mouth margin, third segment nearly three times as long as wide, rounded at apex ; arista bare ; cheek with a well developed, anteriorly directed, curved bristle near anterior margin. *Thorax* with two pairs of postsutural dorsocentrals and but one pair of acrostichals, sternopleurals 2, mesopleura with some forwardly sloping bristles on disc ; scutellum with some short hairs on margin between the strong bristles. Fourth *tergite* in male a little longer than third. Hind *femur* in both sexes with one outstanding bristle beyond middle on anteroventral surface.

Frons of ♀ wider than that of ♂, and somewhat shining.

Length, 3.5–4.5 mm.

Tutuila : Pago Pago, type ♂ and allotype, 12.iv.1924 (Bryan) ; Leone Road, paratypes, 7.ix.1923 (Swezey & Wilder). Savaii : Safune, paratypes, 5.v.1924 (Bryan). Manua : Ofu, paratype, 27.ii.1924 (A. F. Judd).

The last specimen referred to in the foregoing paragraph is rather doubtfully identical with the others, but nevertheless agrees fairly well except in having somewhat wider frons.

CHLOROPIDAE.

In comparison with the eight genera and sixteen species recorded by Bezzi as occurring in Fiji, the subjoined list of Samoan species, which includes but six genera and seven species, is quite meagre.

OSCINOSOMINAE.

Hopkinsella, gen. n.

Similar in general habitus and structure to the Australian *Parahippelates* Becker and *Ephydroscinis* Malloch, differing from the former in lacking the hind tibial spur, from *Ephydroscinis* in having the male arista normal in structure, and from both genera in possessing but two instead of three or four pairs of postsutural dorsocentral bristles. The prescutellar pair of acrostichal bristles is undeveloped, and the two series of acrostichal hairs are in regular rows and not cruciate as in the other two genera. There is one pair of presutural dorsocentrals, which is situated close in front of the suture, and one incurved bristle situated far up on each humerus. Arista bearing short hairs; vibrissae fine and short. Scutellum without discal setulae. Wings rather narrow; legs slender, the hind tibial sensory area almost slit-like.

Genotype: *Hopkinsella purpurascens*, sp. n.

6. *Hopkinsella purpurascens*, sp. n.

♂♀. *Head* testaceous yellow, occiput and posterior portion of cheeks black, anterior margin of frons orange-yellow, posterior margin fuscous, triangle brilliant purple, slightly yellowish at anterior extremity; third antennal segment tinged with brown apically and above; arista black; palpi testaceous yellow; proboscis black. Frons slightly longer than its width at vertex, triangle extending to anterior margin of frons and almost across vertex, latter with usual four bristles and a weak postvertical pair, ocellar bristles rather short, divergent and slightly proclinate, each lateral margin of frons with about three fine bristles, some short hairs on each side of triangle anteriorly but none on it; third antennal segment rather large, about three times as wide as height of cheek, and higher than long, its apex broadly rounded; longest hairs on arista about as long as its basal diameter; proboscis geniculate but not elongate; palpi moderately large and without abnormal armature; eyes bare, a little higher than long. *Thorax* black, slightly shining, mesonotum microscopically shagreened, humeral angles and propleura testaceous yellow, sometimes brownish. Thorax not very noticeably convex, with sparse hairs, including two acrostichal series on almost its entire extent; dorso-centrals not strong; scutellum, slightly flattened on disc, and fully as long as wide, with two moderately long apical bristles and generally

two setulae on each side basad of them. *Abdomen* shining brownish black, narrow, ♂ hypopygium small. *Legs* without exceptional armature, testaceous yellow, generally with apices of middle and hind femora and greater portion of hind tibiae infuscated. *Wings* varying from greyish hyaline to distinctly infuscated, sometimes almost entirely pale brown. Inner cross vein slightly beyond apex of first vein, penultimate section of fourth vein subequal to ultimate section of fifth and about one-third as long as ultimate section of fourth; second costal division about 2.5 times as long as third, latter slightly longer than first; first posterior cell very slightly narrowed at apex. *Halteres* yellow.

Length, 2.25–3 mm.

Upolu: Vailima, type ♀, 12.xii.1925 (Buxton & Hopkins). Savaii: Salailua and Safune, allotype and 16 paratypes, 5.9, 23.v.1924 (Bryan).

Prohippелates Malloch.

This genus was erected for the reception of a West Indian species previously placed in the genus *Hippelates* Loew (= *Cadrema* Walker), but differing from any other therein in having two long, fine hairs on the proboscis in the male, and the dorsal surface of the scutellum flattened. The female lacks the two long hairs on the proboscis, but is otherwise similar to the male. The hind tibial spur is very long, as long as the basal segment of the hind tarsus.

7. *Prohippелates pallidus* (Loew).

This widely distributed species would appear to be common in Samoa, since it is represented in the material before me by some three dozen specimens from Tutuila, Savaii, Upolu, and Tau in the Manua group.

Only a few of the specimens are yellow on the mesonotum and on the dorsum of the abdomen, and have yellowish bristles, the great majority having the mesonotum broadly black on the disc and the bristles and hairs dark. The Cuban examples which I have seen are in most cases entirely yellow and yellow haired, but occasionally specimens are found in which there are traces of two dark vittae on the mesonotum. On the basis of material from the Seychelles Islands, Lamb described the species under the name *Hippelates longiseta*. In the Seychelles the prevailing forms are identical with those found in Cuba, and I have seen the same forms from the Hawaiian Islands. *H. bilineatus* de Meijere may be the same.

Many of the West Indian specimens in the United States National Museum were reared from larvae feeding in dead shell-fish.

Cadrema Walker.

The only species of this genus represented in the material before me is slightly aberrant in having the scutellum flattened above much as in the preceding genus, although the scutellum is shorter. The tibial spur on the hind legs is hardly longer than the diameter of the tibia at its apex. This species does not agree with any of those recorded by Bezzi from the Fiji Islands, and is described below as new.

8. *Cadrema samoaënsis*, sp. n.

♂♀. *Head* orange-yellow; antennae black, lower half of third segment orange-yellow; palpi yellow; frontal triangle with only a small spot within ocellar region black; occiput blackened centrally. Frons longer than wide at vertex, triangle highly polished and smooth, extending to anterior margin, its extremity rather bluntly rounded; all four verticals, the post-verticals, and about five setulae along each orbit about equally long, ocellars and a pair of setulae in centre margin shorter; third antennal segment somewhat reniform, higher than long; arista distinctly black pubescent; face narrowed below; eyes distinctly hairy; cheek almost linear; palpi moderate; proboscis stout. *Thorax* orange-yellow, with three shining black vittae on mesonotum which are fused except posteriorly, lateral pair not extending to hind margin of mesonotum; pleura unspotted; scutellum very slightly darkened on sides at base. Thoracic dorsum with numerous decumbent hairs which are set in minute punctures, somewhat aggregated on a line on each side where the dorsocentrals occur in other genera; scutellum almost rounded in outline, flattened on disc, with a pair of apical bristles. *Abdomen* black, shining, yellowish at extreme base, moderately stout, and without abnormal armature. *Legs* coloured like thorax, not exceptionally stout or long, hind femora thickest, hind tibial spur slightly curved and not as long as that on middle tibia. *Wings* greyish hyaline. Penultimate section of third vein fully half as long as penultimate section of fourth, latter not as long as ultimate section of fifth. *Halteres* yellow.

Length, 1.75 mm.

Savaii: Salailua and Safune, type ♂, allotype, and one paratype, v.1924 (Bryan).

Oscinosoma Lioy.

This genus, which has been referred to under various names at different times by different authors, has until recent years been generally known as *Oscinis*, but unfortunately the genotype of the latter is radically different from the species included in the present concept, and in fact belongs to the other subfamily; the names *Oscinella* Becker, *Botanobia* Lioy, and *Oscinosoma* have more recently been used to replace *Oscinis*, and the last mentioned is adopted here.

Two species apparently referable to *Oscinosoma* are represented amongst the Samoan material before me, and these are dealt with below. In all probability many more species are yet to be found in the islands, since the genus is quite common in adjacent regions.

9. *Oscinosoma agilis*, sp. n.

♂♀. *Head* testaceous yellow, occiput blackened, frontal triangle darkened above; antennae yellow; aristae black; palpi brown. Eyes bare, higher than long, slightly oblique; frons distinctly longer than its width at vertex, triangle extending to distinctly beyond middle of frons, almost equilateral; sides of frons with several distinct setulae; third antennal segment wider than long, broadly rounded at apex; aristae distinctly pubescent; cheeks almost linear. *Thorax* shining black, pleura yellow except for a patch below wing base, apex of scutellum and lateral margins of mesonotum also yellow, latter more broadly so anteriorly. Thorax slightly flattened on posterior portion of mesonotum, with fine but not dense pale hairs situated in minute punctures; scutellum flattened on disc, with a slight rim giving it a faint suggestion of having a pointed tip, disc with fine pale hairs and apex with two yellowish bristles. *Abdomen* shining black, elongate, subcylindrical, male hypopygium rather larger than usual. *Legs* yellow, middle and hind tibiae infuscated on more than their basal halves. Legs longer than usual in this genus, hind femora fully as long as abdomen and a little stouter than the others; basal segment of hind tarsus longer than remaining segments combined. *Wings* greyish hyaline; first costal division fully two-thirds as long as second and a little longer than third; penultimate section of third vein over half as long as penultimate section of fourth; first posterior cell not narrowed at apex. *Halteres* pale yellow.

Length, 3 mm.

Savaii : Safune, 2,000–4,000 feet, rain forest, type ♂, 2.v.1924 ; Salailua, allotype, 23.v.1924 (Bryan).

10. *Oscinosoma bryani*, sp. n.

♀. A darker species than the preceding, with *frontal triangle* and antennae entirely black, *mesonotum* shining black with only lateral margins in front of wings broadly yellowish, and a black mark on each pleural sclerite ; scutellum yellow. *Abdomen* shining brownish black. *Legs* yellow, apices of middle and hind femora and bases of middle and hind tibiae broadly blackened. *Wings* greyish hyaline. *Halteres* yellow.

Similar to *O. agilis*, with about four strong setulae on each side of the frons, but the legs are not so long, the mesonotum is not noticeably flattened posteriorly, and the wings are a little shorter and wider.

Length, 2 mm.

Savaii : Safune, lower rain forest, 1,000–2,000 feet, type, 5.v.1924 (Bryan). Named in honour of the collector.

CHLOROPINAE.

Bezzi recorded but one species of this subfamily from the Fiji Islands, but in the Samoan material I find examples of two, which are dealt with below.

Diplotoxa Loew.

There appear to me to be two rather distinct groups in this genus, one, containing the genotype and several other North American species, in which the third antennal segment is elongate (not less than 1.25 as long as its greatest width) and tapers slightly to the tip, and the other in which this segment is not longer than wide, and is broadly rounded at the tip, as in most species of the genus *Chlorops* Meigen. Of the latter group species occur in North and South America, Europe, Tasmania, and New Zealand. In these species practically the only distinction from *Chlorops* consists of the more closely placed cross veins of the wing, which are rarely separated by a distance exceeding the length of the outer cross vein, and the more forwardly curved apical section of the third vein, which ends in the costa farther from the apex of the wing than in *Chlorops*.

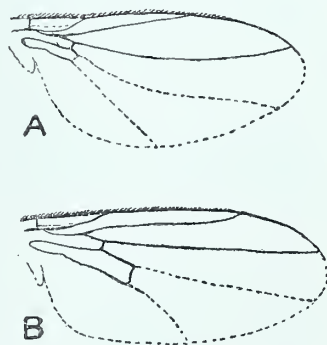
There is but little difference between this group and *Elliponeura* Loew, the

latter being distinguished from it only by the lack of the outer cross vein of the wing. *Elliponeura* has been recorded from the Fiji Islands by Bezzi, but whether his example was an aberrant *Diptotoxa* it is impossible to determine without an examination of the type, which was in rather poor condition. I have in my possession a specimen from New Zealand in which the outer cross vein in both wings, except for a minute spur at its upper extremity, is lacking; this insect I refer to *Diptotoxa*, as it is apparently merely aberrant.

I figure below the wings of the two Samoan species, one of which I place in *Diptotoxa* and the other in *Chlorops*, to illustrate the distinctions between the genera as accepted by me. The venational differences are all that can be depended upon for the separation of the two concepts, and these are not always as sharply marked as in the two examples here figured.

11. *Diptotoxa polita*, sp. n.

♂♀. *Head* orange-yellow, upper occiput except lateral angles black, frontal triangle glossy black, yellowish on sides anteriorly; antennae and palpi orange-yellow; arista dark. Eyes bare, higher than long, slightly oblique; frons longer than its width at vertex, much narrowed in front, triangle smooth, occupying practically all of vertex and extending to anterior margin, its anterior extremity appearing very much attenuated because of the black colour being reduced to a central line; vertical and post-vertical bristles very short and fine ocellars minute; third antennal segment a little higher than long; arista pubescent; cheek linear in front, vibrissal hair distinct but not very strong; face slightly receding below; proboscis short; palpi moderate. *Mesonotum* glossy black, with a small yellow mark on inner side of each humeral angle, and a larger one on each side at suture; pleura largely black, propleura and margins of other sclerites yellowish; scutellum yellow, narrowly black on sides. Thorax with dorsum bearing short hairs in minute punctures, and with traces of three shallow, impunctate sulci; scutellum flattened on disc, which appearance is emphasised by the black lateral margins, the outline subtriangular, margin with four bristles,



TEXT-FIG. 3.—A, *Diptotoxa polita*, sp. n. Wing. B, *Chlorops minutula*, sp. n. Wing.

apical pair longest. *Abdomen* shining brownish black, narrow and tapering, hypopygium of male yellow, small. *Wings* hyaline, venation as in text-fig. 3, A. *Legs* and knobs of *halteres* orange-yellow; legs normal, hind femora not thickened.

Length 1 mm.

Tutuila: Pago Pago, type ♂ and allotype, 20 and 10.ix.1923, respectively (Swezey & Wilder).

Chlorops Meigen.

The species dealt with below is very similar to *Diplotoxa polita* in general appearance, but must be assigned to *Chlorops* in the accepted sense because of its wing venation. It is one of the smallest species of this genus that I have seen, and should be readily distinguishable from any other by means of that character and its coloration.

12. *Chlorops minutula*, sp. n.

♂ *Head* testaceous yellow, frons more orange-yellow, triangle brown, becoming blackish posteriorly where the colour merges into the black occiput; antennae yellow (third segment lacking in type); palpi yellow. Eyes bare; frons about 1.5 as long as its width at vertex, narrowed in front, but not as markedly so as in *Diplotoxa polita*, triangle extending to anterior margin, its sides straight, its length distinctly exceeding its width at vertex; cheeks narrow in front, face slightly receding below. *Thorax* almost as in *Diplotoxa polita*, shining brownish-black, humeri and scutellum more yellowish, pleura still paler, but with usual black marks on all sclerites except below prothoracic spiracle. *Abdomen* concolorous with mesonotum. *Legs* orange-yellow. *Wings* hyaline, venation as in text-fig. 3, B. *Halteres* yellow.

Length 1 mm.

Upolu: Apia, type, 12.ix.1923, "*Sporobolus*" (Swezey & Wilder). One specimen.

Beyond the single word "*Sporobolus*" there is nothing to indicate the habits of the species, and it is probable that the specimen was merely collected on the grass. The larvae are undoubtedly miners in some such plant, but whether in this one or not is uncertain from the record.

PIOPHILIDAE.

Bezzi records two species of the genus *Piophila* as occurring in the Fiji Islands, but only one is represented in the material now before me. The common *P. casei* Linné, of Europe, is not included, though in all probability it is to be found in Samoa.

Piophila Fallén.13. *Piophila contecta* (Walker).

A widely distributed species, occurring in Australia and northward to the Philippines.

Upola : Apia, No. 667, from body of dead rat, 23.v.1924 (Buxton & Hopkins); Malololelei, 2.vii.1924 (Armstrong), and vii.1925 (Wilder); Afiamalo, 7.xi.1923 (Wilder). Savaii : Safune, 12.v.1924 (Bryan).

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TEXT-FIG. 1. Hypopygium of *Lonchaea filifera* Bezzi; (a) from below; (b) from the side.

TEXT-FIG. 2. Hypopygium of *Lonchaea nigrifella*, sp. n.; (a) from below; (b) from the side.

TEXT-FIG. 3. Wings of *Diplotoxa polita*, sp. n. (A), and *Chlorops minutula*, sp. n. (B).